

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 20277
	:	
Eiji MARUYAMA	:	Confirmation Number: 2908
	:	
Application No.: 10/790,759	:	Tech Center Art Unit: 1795
	:	
Filed: March 03, 2004	:	Examiner: Golam Mowla
	:	
For: PHOTOVOLTAIC DEVICE AND DEVICE HAVING TRANSPARENT CONDUCTIVE FILM		

REPLY BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is submitted in response to issues raised in the Examiner's Answer
mailed April 9, 2010, pursuant to 37 C.F.R. § 41.41.

REMARKS

THE ORIGINAL APPLICATION SUPPORTS “AT LEAST 0.48”

On page 3 of the Examiner’s Answer, the Examiner asserted that the original specification does not provide any support as to whether intensity ratio is “at least 0.48” in claims 8 and 19, since the term “at least 0.48” is exclusionary proviso which excludes any values less than 0.48 and the original application allegedly does not contemplate that the ratio (I_1/I_2) of the intensity (I_1) of said first peak to the intensity (I_2) of said second peak is at least 0.48 and around 0.5. The Examiner’s assertion has no basis. Contrary to the Examiner’s assertion, the written description requirement does not require basis for excluding the non-claimed ranges in claims to be supported by the specification. The written description requirement requires the disclosure of the application relied upon to reasonably convey to the artisan skilled in the art that the inventor had possession the invention as claimed at the time of filing date. *Vas-Cath, Inc. v. Mahurkar* 935 F.2d 1555, 1563-1564 (Fed. Cir. 1991)

As disclosed in FIG. 6 of the application-as- filed, the desired great cell output (P_{max}) is achieved when the ratio (I_1/I_2) of the intensity (I_1) of said first peak to the intensity (I_2) of said second peak is around 0.48 or 0.5. The claimed range of the intensity ratio (I_1/I_2), “at least 0.48 and around 0.5” covers the range showing the great cell output (P_{max}). FIG. 6 of the application-as-published clearly discloses the claimed range as to convey to the artisan that the inventor had possession the claimed range of intensity (I_1/I_2) as claimed at the time of filing date.

NEERINCK, ADURODIJA and AAPA DO NOT TEACH THE CLAIMED INTENSITY RATIO

On pages 5-6 of the Examiner's Answer, the Examiner alleged that Neerinck teaches the ratio (I_1/I_2) is 0.4545, and Neerinck teaches that increasing the incidence angle (ω) increases the high-angle peak intensity (I_2) and decreasing the incidence angle(ω) decreases the high-angle peak intensity. The Examiner further averred, based on alleged Neerinck's teaching, that varying the ratio of the intensity of the first peak to the intensity of the second peak into an optimum value involves only routine skill art.

Optimization of the ratio of the intensity of the first peak to the intensity of the second peak, however, is not obvious to one of ordinary skill in the art. As Neerinck addressed, ITO films needs to be subject to low internal stress for the ITO films to be applied as a transparent conductor. (See Neerinck's column 1, lines 5-10 in "I. Introduction") On the other hand, Neerinck discloses that the low-angle peak originates from the top layer subject to internal stress, whereas the high-angle peak originates from the stress-free bottom layer. (See Neerinck's column 1, lines 14-16 in "2. Experimental") Thus, Neerinck's ITO film requirement regarding low stress teaches away the claimed double-type peak profiles (low-angle peak and high-angle peak).

Unlike the Examiner's assertion, Neerinck does not teach that increasing the incidence angle (ω) increases the high-angle peak intensity (I_2) and decreasing the incidence angle(ω) decreases the high-angle peak intensity. In Neerinck, the high-angle peak becomes visible when the incidence angle (ω) is greater than 0.4. The intensity of the high-angle peak has a tendency to increase as the incidence angle(ω) increases up to 0.7, whereas the intensity of the high-angle peak has a tendency to decrease with increase of the incidence angle (ω) when the incidence

angle is greater than 0.7. Contrary to the Examiner's assertion, increasing or decreasing the incidence angle (ω) does not lead to uniform tendency of increase or decrease of the high-angle peak intensity. The Examiner's conclusion regarding involvement of routine skill in optimizing the intensity ratio (I_1/I_2) is clearly based on a misunderstanding of Neerinck.

Moreover, Neerinck's FIG. 4 does not tell about any relationship between the incidence angle and intensities of the low-angle peak and the high-angle peak. Thus, the Examiner's assertion that the intensity ratio of two peaks can be optimized by controlling value of the incidental angle ω is without any ground.

Finally, the claimed range, "at least 0.48 and around 0.5" of the (I_1/I_2) of the intensity (I_1) of said first peak to the intensity (I_2) of said second peak, achieves unexpected result, maximum cell output (P_{max}) of the claimed photovoltaic device, as explained. (See FIG. 6 and page 26, lines 6-14 of the application-as-filed) This unexpected result clearly rebuts the Examiner's assertion that the claimed range involves routine skill in the art. *In re Woodruff*, 919 F.2d 1575 (Fed. Cir. 1990)

In rejecting a claim under 35 U.S.C. § 103, the Examiner is required to discharge the initial burden by, *inter alia*, making "**clear and particular**" factual findings as to a **specific understanding** or **specific technological principle** which would have **realistically** impelled one having ordinary skill in the art to modify an applied reference to arrive at the claimed invention based upon facts, --not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolchem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab, supra*; *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). That burden has not been discharged.

Thus, since Adurodija fails to cure deficiencies of Neerinck and AAPA, the combination of AAPA, Neerinck and Adurodija fails to teach "an indium oxide layer having (222) plane

orientation with two (222) peaks in said indium oxide layer, wherein said two (222) peaks include a first peak having an intensity (I1) and a second peak having an intensity (I2) and the ratio (I1/I2) of the intensity (I1) of said first peak to the intensity (I2) of said second peak is at least 0.48 and around 0.5,” as required by claims 8 and 19. Therefore, claims 8 and 19 are patentable over the combination of AAPA, Neerinck and Adurodija.

The dependent claims are allowable at least for the same reasons as the independent claims from which they depend and further distinguish the claimed apparatus and method.

Based upon the arguments submitted supra, and in the Appeal Brief filed February 3, 2010, Appellant respectfully submits that the Examiner's rejections under 35 U.S.C. § 112 and 35 U.S.C. § 103 are not legally viable. Appellant, therefore, respectfully solicits the Honorable Board to reverse the Examiner's rejections of claims 8-11, 14, 19 and 20.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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